Robotic Lunar Lander Development Project

NASA's Marshall Space Flight Center and **The Johns Hopkins University Applied Physics Laboratory** (APL) are creating a new generation of small, smart, versatile robotic landers to achieve scientific and exploration goals on the surface of the moon. Directed by NASA's Planetary Science Division, Headquarters Science Mission Directorate (SMD), the lunar lander capability being developed will pave the way for many exciting robotic scientific missions. These robotic landers are designed to carry instruments to measure moonquakes, to study resources on the lunar surface, and to gather information for future missions to the moon. The landers will be capable of landing on the near side or far side of the moon, inside or on the edge of craters, and they will be designed to withstand extreme environments on the lunar surface.

Marshall and APL engineers are currently conducting risk reduction activities to aid in the design of this new generation of multi-use landers for future robotic space exploration.
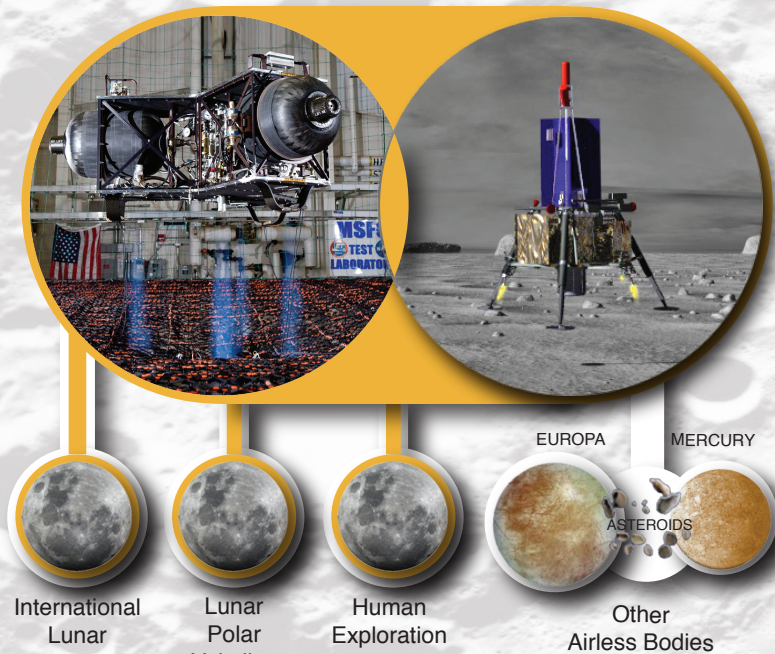
For more information about the Robotic Lunar Lander Development Project, please visit www.nasa.gov/roboticlander

The new landers are small in size (comparable to a golf cart), but big in performance.

Mission Scenarios

These landers can help scientists answer fundamental questions about the moon, the Earth, and the formation of our solar system.

EUROPA   MERCURY

ASTEROIDS

International Lunar Network

Lunar Polar Volatiles

Human Exploration Precursor

Other Airless Bodies

International Lunar Network
- Determine the composition and structure of the moon's interior— its crust, mantle and core
- Measure heat flow from the lunar interior
- Monitor lunar seismic activity

Lunar Polar Volatiles
- In situ characterization of volatile species including water, carbon dioxide, methane, and ammonia
- Understand current processes taking place in the lunar atmosphere and cold traps

Exploration Systems Mission Directorate
- Characterize landing sites for human exploration
- Understand the lunar surface environment: lighting, radiation, thermal, and dust
- Provide essential information for future in situ resource utilization
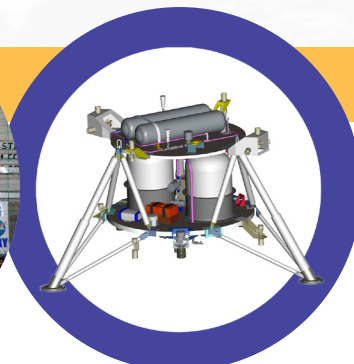
Other Airless Bodies
- Surface science
- Geophysical networks
- Sample return

Robotic Lander Test Bed

NASA Marshall Space Flight Center's Robotic Lander Test Bed engineers and technicians conduct test activities to prove the design of a new generation of robotic landers for the moon and other airless bodies in the solar system.

Cold Gas Test

Warm Gas Test

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